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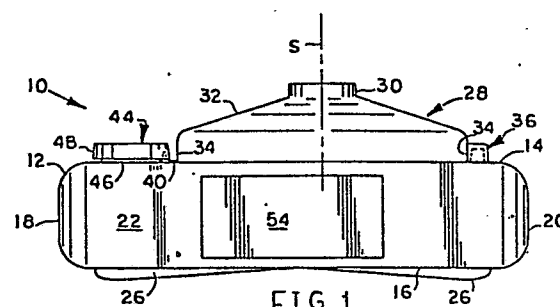
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⑤④ **Portable container and funnel.**

⑤⑦ A portable, vented container (10) particularly for dirty oil, having a small fill spout (46) and a vent opening (58) is used in conjunction with a funnel (28). A vent closure member (36) and a funnel-securing latch (40) are integral with the funnel (28) so that when the funnel (28) is inverted and positioned in surmounting relation to the container (10), the vent closure member (36) closes the vent (58) and the securing latch (40) is engaged by a fill spout cap (44) which engagement secures the funnel against movement and hence maintains the closure of the vent (58) as well. Removal of the fill spout cap (44) releases the funnel (10), and positioning the funnel (10) into its operative position relative to an automotive oil drain plug separates the vent closure member (36) of the funnel (10) from the vent (58). An elongate extension member (70) having a flexible medial portion is further provided.



PORTABLE CONTAINER AND FUNNEL

This invention relates to vented containers having fill spouts, which are used with a filling funnel.

Containers having small fill spouts are normally vented to allow the air inside the container to escape as liquid fluids are charged thereinto. Typically, the vent is provided in the form of an upstanding coupling which is provided with a closure member in the form of a cap which may or may not be attached to the coupling itself. Where the cap is attached to the coupling, its loss is safeguarded against but still the user of the container must remember to open and close the vent as needed. Vent caps that are not attached to their couplings are usually lost.

There is a need, therefore, for a vent cap that is safeguarded against loss, and which also opens and closes the vent as needed without requiring the user thereof to remember to open and close such vent.

Another common problem with small-mouthed containers is that the funnels which must be used therewith are often lost. US-A-4 403 692 solves this problem by permanently securing the funnel to the container. This storage expedient is unsatisfactory because it is important to maintain funnels of the type used to fill automotive crankcases in a substantially clean condition as the introduction of dirt into a crankcase can damage engine parts.

Therefore, there is a need for a funnel storage apparatus capable of storing a funnel in an inverted position

when it is not in use. The storage apparatus that is needed would also safeguard against the loss of the funnel.

The present invention provides a combination of a container and a funnel member therefor, the container
5 having an upwardly projecting fill spout and a vent means in the form of an aperture in an upwardly facing surface of the container, the funnel member having a rim, converging sidewalls, a downspout which is adapted for releasable engagement with the fill spout of the container, and a vent
10 closure member secured to the funnel rim and projecting outwardly therefrom, said vent closure member closing said vent when brought into registration therewith.

In a preferred form of the invention, which will now be outlined in some detail, the container is of parallel-
15 epiped form and has finger-receiving recesses formed in its opposite ends, on the underside thereof, which recesses are grasped by an individual when transporting the container.

The top of the container includes a large, imperforate medial portion against which the rim of the funnel is seated
20 when the funnel is in its storage position.

A fill spout of small diameter projects upwardly from the top of the container, and is disposed near the periphery of the container so the medial portion of the container can receive the stored funnel, as aforesaid.

25 A sleeve member which defines a vent opening projects upwardly from the top of the container as well, but is disposed in longitudinally spaced relation to the fill spout

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so that it is near the periphery of the container opposite from the fill spout.

The longitudinal axis of symmetry of the container bisects the finger-receiving recesses or handles, the fill
5 spout, the vent-defining sleeve, and the funnel when the latter is in its stored position. In this manner, the container is stable when transported.

The funnel has an integral vent closure member that projects outwardly from the rim of the funnel, in radial
10 relation to the funnel's axis of symmetry. A latch member used to secure the stored funnel against movement is also formed integral to the funnel, extends radially with respect to said axis from the rim thereof, and is positioned in opposition to the vent closure member.

15 The funnel's size and the amount of space between the fill spout and the vent opening are selected so that when the funnel is inverted and placed in the centre of the medial portion of the top wall of the container, and properly rotated about its axis of symmetry, the vent closure
20 member will align with and seal the vent opening and the latch which is opposed to the vent closure member will be positioned in close proximity to the fill spout.

A novel fill spout closure member in the form of a double-walled cap, when brought into screw threaded engage-
25 ment with the fill spout, will seal the spout and simultaneously overlies the funnel latch to secure the funnel against displacement.

The novel cap's first wall is internally threaded and thus adapted for screw threaded engagement with the externally threaded fill spout. Its outer wall defines an annular recess having an open bottom, which recess surrounds the first wall and which recess receives the funnel latch therewithin. The annular configuration of the recess eliminates any need for aligning the cap with respect to the latch.

In this manner, the act of inverting the funnel and placing it in its storage position on the top wall of the funnel will close the vent if the alignment is made. Once the vent has been closed, no further alignment is required as the sealing of the fill spout by the novel cap will also secure the funnel as desired.

Thus, when the funnel is deployed into its operative configuration, the user of the invention need only remove the fill spout cap, as such will release the funnel from its stored position. The act of placing the funnel's spout into the container's fill spout then serves to open the vent.

A funnel extension member having a flexible medial portion is also disclosed hereinafter. A slideably mounted rigid sleeve member serves to limit the flexibility function of the extension member when desired when such a member is positioned in registration with the flexible portion of the member. However, the flexibility of the member is restored upon slidingly displacing of the sleeve away from the flexible medial portion.

In the preferred embodiment of the invention,
there is provided -

1. A container, particularly for dirty oil, that includes a funnel as an attachment to the container so
5 that the funnel is not easily misplaced.
2. An attachment means that protects the inside walls of the funnel from contamination when the funnel is stored.
3. Means whereby the vent of the container can be
10 automatically opened and closed at the time the funnel is placed into its operative position and its storage position, respectively.
4. A funnel downspout extension of improved design.

A preferred form of the invention will now be
15 described by reference to the accompanying drawings in which

- FIG. 1 is a side elevational view of the container with the funnel stored in its inverted position thereatop;
FIG. 2 is a top plan view of the container body member;
20 FIG. 3 is a partially cut away side elevational view of the novel fill spout closure means;
FIG. 4 is a side elevational view taken along line 4-4 of FIG. 2;
FIG. 5 is an end view taken along line 5-5 of FIG. 4;
25 FIG. 6 is a top plan view of the novel funnel member;
FIG. 7 is a side elevational view of the funnel member taken along line 7-7 of FIG. 6;

FIG. 8 is a side elevational view, like that of FIG. 4, which shows the funnel member engaging the fill spout of the container body;

FIG. 9 is a side elevational view of the novel funnel
5 downspout extension member with the rigid sleeve in its locked position;

FIG. 10 is a side elevational view of the funnel downspout extension member with the rigid sleeve in its unlocked position;

10 FIG. 11 is a side elevational view showing the extension member operatively coupled to the funnel member with the sleeve in its locked position; and

FIG. 12 is a side elevational view showing the extension member operatively coupled to the funnel member with
15 the sleeve in its unlocked position.

Similar reference numerals refer to similar parts throughout the several views of the drawings.

Referring now to FIG. 1, it will there be seen that an illustrative embodiment of the invention is designated by the reference numeral 10 as a whole. The container
20 body 12 has a parallelepiped construction when seen in perspective. Visible in FIG. 1 are the container's top wall 14, bottom wall 16, its left and right end walls 18, 20, a side wall 22, and support members collectively
25 designated 26.

The novel funnel is indicated generally by the numeral 28. Funnel 28 includes downspout 30, sloping or converging walls 32, and an annular rim 34.

A vent closure member 36 is integrally formed with the rim 34 and extends therefrom as shown. The closure member 36 overlies a vent shroud 38 which is shown in phantom lines in FIG. 1.

5 A latch 40 is also integrally formed with the funnel, rim 34 and is on the opposite side thereof relative to the vent closure member 36. The latch 40 has an "L" shape as shown. The horizontal leg of the latch abuts the top wall 14 of the container 12 and extends radially
10 with respect to the axis of symmetry S of the funnel 28. It terminates in an upstanding leg (shown in phantom lines in FIG. 1) that extends into a cavity 42, which cavity 42 is an annular recess as shown in FIG. 2.

Referring again to FIG.1, fill spout cap 44 is
15 internally threaded to mate with the external threads of the fill spout 46. The annular latch-receiving recess 42 is formed by the provision of annular wall 48 that surrounds the spout 46, said annular wall depending to the periphery of the top wall of cap 44. The diameter
20 of the top wall of cap 44 is greater than the diameter of the fill spout 46 by an amount substantially equal to the width of the latch-receiving recess 42.

The placement of the upstanding portion of latch 40 in the annular cavity 42 maintains the funnel 28 in
25 its inverted, stored position until the cap 44 is removed.

The space designated 54 in FIG. 1 is one of two display spaces and accommodates a label which may have

imprinted thereon the trademark of the device and other information.

Returning now to FIG. 2, it will there be seen that the longitudinal axis of symmetry of the device 5 10 is indicated by the centreline C. It bisects the vent 58 which is formed in the top wall 14 of the container 10 and which is surrounded by vent shroud 38, the fill spout 46, and the longitudinally spaced handles 60,62 of the invention. The width of the handles 60,62 is 10 sufficient to accommodate four fingers of a human hand. Both of the label-accommodating recesses 54,54 mentioned in connection with the description of FIG. 1 are shown in FIG. 2 as well.

The vent closure member 36 slideably and snugly 15 engages the outer walls of the shroud 38, thereby closing the vent opening 58, when funnel 28 is in its inverted storage position, as aforesaid.

FIG. 3 shows the internal threads 64 on the cap 44 and the annular wall 48 that depends to the periphery 20 of the cap top wall to define the annular cavity 42 into which the upstanding portion of latch 40 extends.

The externally threaded fill spout 46 is shown in FIG. 4, which Fig. shows the container 12 with funnel 28 and cap 44 separated therefrom.

25 The handles 60,62 include concave surfaces 61,63, respectively, and convex surfaces 65,67, the former of which are abutted by fingertips when the container is

carried and the latter of which provide a comfortable rounded weight bearing surface.

An end view of the container 12 is provided in FIG. 5.

5 A top view of the novel funnel 28 appears in FIG. 6. A strainer 66 formed by a pair of cross bars is formed where the downwardly sloping walls 32 of the funnel 28 merge with the funnel's downspout. The generally rectangular planform of the funnel 28 conforms to the
10 planform of the container body 12 as shown in FIG. 2, but the corresponding dimensions of the funnel are smaller.

 The downspout 30 of funnel 28 is internally threaded as indicated by the reference numeral 68 appearing in FIG. 7, and is thus adapted for screw threaded engagement
15 with the externally threaded fill spout 46. Accordingly, the downspout 30 of the funnel 28 is coupled to fill spout 46 when it is desired to charge the container with dirty oil. This operative positioning of the funnel 28 and fill spout 46 is depicted in FIG. 8. A comparison
20 of FIGS. 1 and 8 indicates that the removal of cap 44 from spout 46 releases latch 40 so that funnel 28 can be separated from its engagement with top wall 14 of container 12, restored to its upright configuration, and coupled with the spout 46. The separation of the
25 funnel 28 and the container body top wall 14 also separates the vent closure member 36 from vent shroud 38, which separation exposes vent 58 (FIG.2) to ambient air.

The internal threads 68 of downspout 30 are formed in outer wall 31 thereof. An inner wall 29 is spaced radially inwardly of outer wall 31, and is concentric therewith. Accordingly, dirty oil contacts inner wall 5 29 only.

The truncate downspout 30 of funnel 28 is provided because some vehicles are built close to the ground. However, other vehicles are built higher from the ground and the use of a downspout extension member becomes advis- 10 able.

An improved downspout extension member is shown in FIGS. 9-12, and is designated 70 as a whole. It includes an externally threaded adaptor 72 which is coupled to the internally threaded downspout 30 of funnel 28 when 15 in use, as shown in FIGS. 11 and 12. Another adaptor 74 at the lower end of the extension member 70 is internally threaded as at 75 (FIG. 10) to mate with the external threads of the fill spout 46. An elongate medial portion 76 interconnects the upper and lower adaptors 72 and 20 74.

A slidably mounted rigid sleeve member 78 is shown mid-length of the medial portion 76 in FIG. 9. When the sleeve member 78 is locked into this position by means disclosed hereinafter, the novel extension member 25 70 can be used in the same manner as conventional downspout extension members, which use is depicted in FIG. 11.

However, when the sleeve 78 is unlocked and

slideably displaced to its lowermost position, which position is depicted in FIG. 10, such displacement frees a flexible member 80 from confinement so that it is free to bend. More specifically, upper portion 82 of the
5 downspout extension member medial portion 76 and lower portion 84 thereof may be displaced from their axial alignment with each other, i.e., their respective axes of longitudinal symmetry may be made oblique to one another. As shown in FIG.12, when the flexible member 80 is free,
10 funnel 28 can be moved in any direction relative to lower coupling 74, or vice versa.

FIGS. 10 and 12 both show the means employed to lock and unlock sleeve 78 as desired. A pair of vertically spaced beads, collectively designated 86, are
15 formed on upper and lower portions 82,84 of the extension member medial portion 76. A pair of vertically spaced bead-receiving cavities, collectively designated 88, are formed internally of sleeve member 78, so that the sleeve 78 is locked into overlying relation to the flexible
20 member 80 when beads 86 are disposed therein.

To unlock the sleeve 78, the user of the inventive apparatus grasps sleeve 78 and slides it upwardly by a distance equal to the depth of the bead-receiving cavities 88. Each bead 86 will then be positioned in channels 90
25 which are also formed internally of sleeve 78. The user of the device then rotates the sleeve 78 until the beads 86 have travelled the length of the arcuate channels 90,

which length could be a quarter of an inch, for example.

This rotation of sleeve 78 will bring the beads 86 into registration with a vertically extending channel 92 so that the sleeve 78 can be moved to the position shown

5 in FIGS. 10 and 12.

CLAIMS :

1. A combination of a container and a funnel member therefor, the container having an upwardly projecting fill spout and a vent means in the form of an aperture in an upwardly facing surface of the container, the funnel member having a rim, converging sidewalls, a downspout
5 which is adapted for releasable engagement with the fill spout of the container, and a vent closure member secured to the funnel rim and projecting outwardly therefrom, said vent closure member closing said vent when brought into registration therewith.
- 10 2. A combination according to claim 1 further comprising a fill spout closure means in the form of a cap member, and a latch member projecting from the funnel rim, the cap member being constructed so that, when the funnel member is in inverted position on the container,
15 the latch member is engaged and held by the cap member when the latter is engaged with the fill spout.
3. A combination according to claim 2 wherein the cap member has a top wall having a diameter greater than the outer diameter of the fill spout and an annular wall
20 depending from the periphery of the top wall, thus providing an annular cavity into which the latch member of the funnel member fits.
4. A combination according to claim 2 or claim 3 wherein the parts are so arranged that, when the funnel
25 member is in its said inverted position on the container,

the vent closure member is in registration with the vent.

5. A combination according to claim 4, wherein the vent closure member and latch member are secured to the funnel rim in opposed relation to each other.

5 6. A combination according to any preceding claim, wherein the container has a sleeve-shaped shroud member surrounding the aperture, and the vent closure member is constructed to engage the shroud member.

7. A combination according to any preceding claim,
10 wherein the container has two handle means formed at opposite ends of the body of the container, each defined by a concavity formed in the bottom of the container body and by a convexity contiguous thereto and continuous therewith, said convexity merging with an end wall of
15 the container body.

8. A combination according to any preceding claim wherein said fill spout is externally threaded and said funnel member downspout is internally threaded.

9. A combination according to claim 8, wherein the
20 funnel member downspout further comprises a cylindrical outer wall within which said internal threads are formed, and a cylindrical inner wall spaced radially inwardly of the outer wall so that fluid contacts only the inner wall when the container is used.

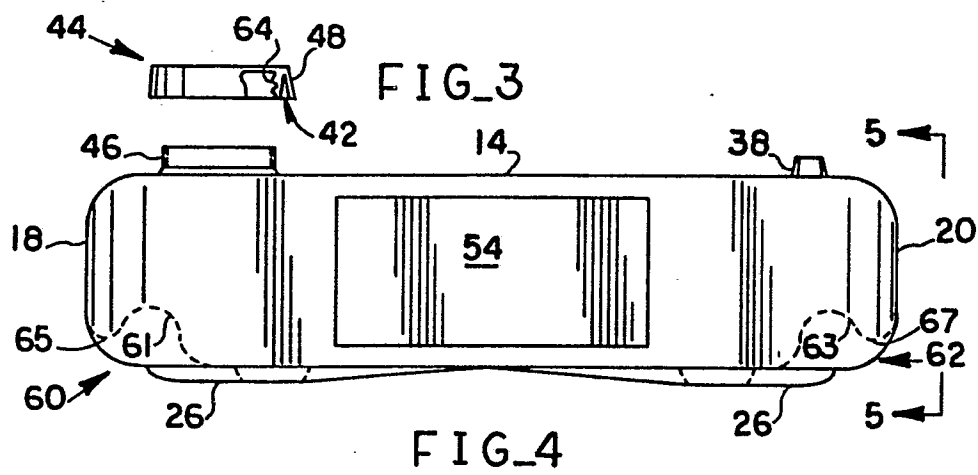
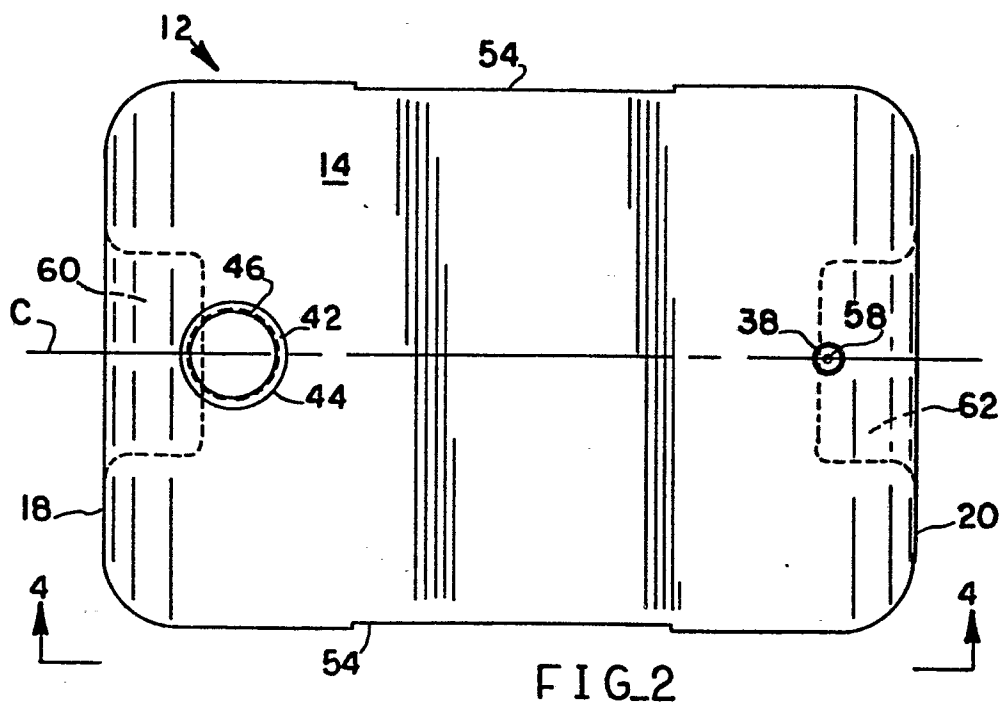
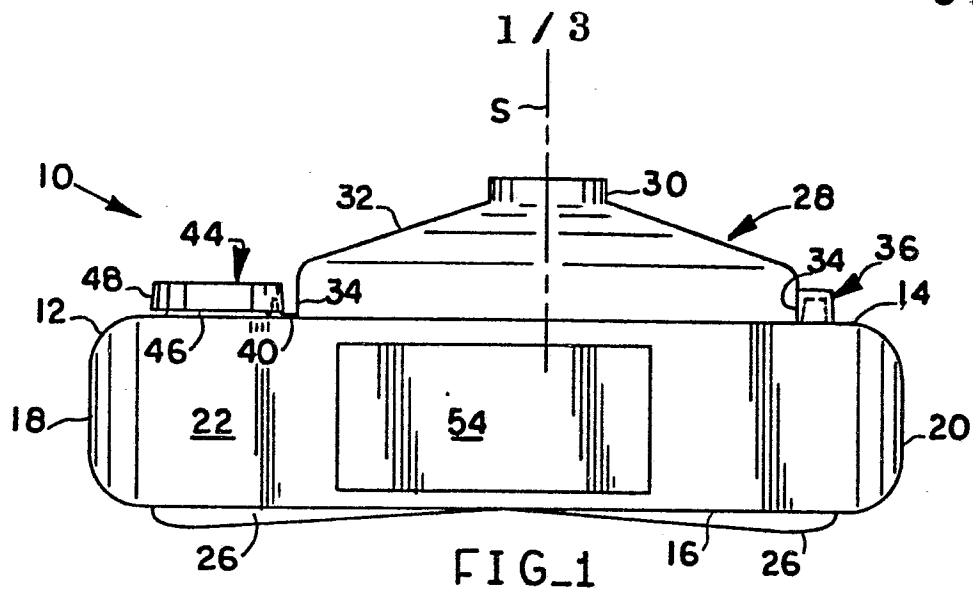
25 10. A combination according to any preceding claim, further comprising an elongate funnel downspout extension member having a first end engageable with the funnel

downspout and a second end engageable with the fill spout, said downspout extension having a flexible medial portion.

11. A combination according to claim 10, wherein the downspout extension member is fitted with a rigid
5 locking sleeve to restrict the downspout extension member from flexing at said medial portion.

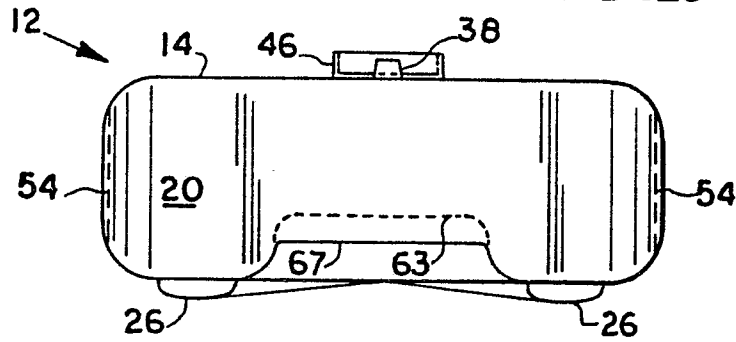
12. A combination according to claim 11, wherein means are provided for selectively locking and unlocking said sleeve into and out of restrictive engagement with
10 said medial portion.

13. A combination according to claim 12, wherein said selective locking and unlocking means includes a pair of vertically spaced bead members formed on the downspout extension member, one of which is positioned
15 above the flexible medial portion and one of which is positioned below the flexible medial portion, and wherein the sleeve has a pair of cooperatively spaced bead-receiving cavities formed therein, which cavities are interconnected by a vertical slot and which cavities
20 are formed at the end of associated channels orthogonal to said vertical slot.

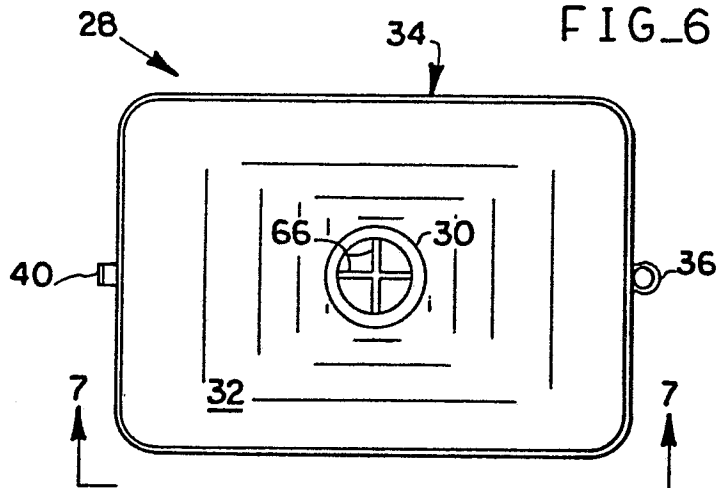


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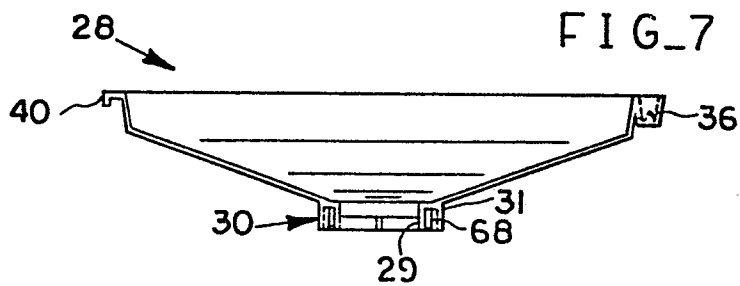
FIG_5



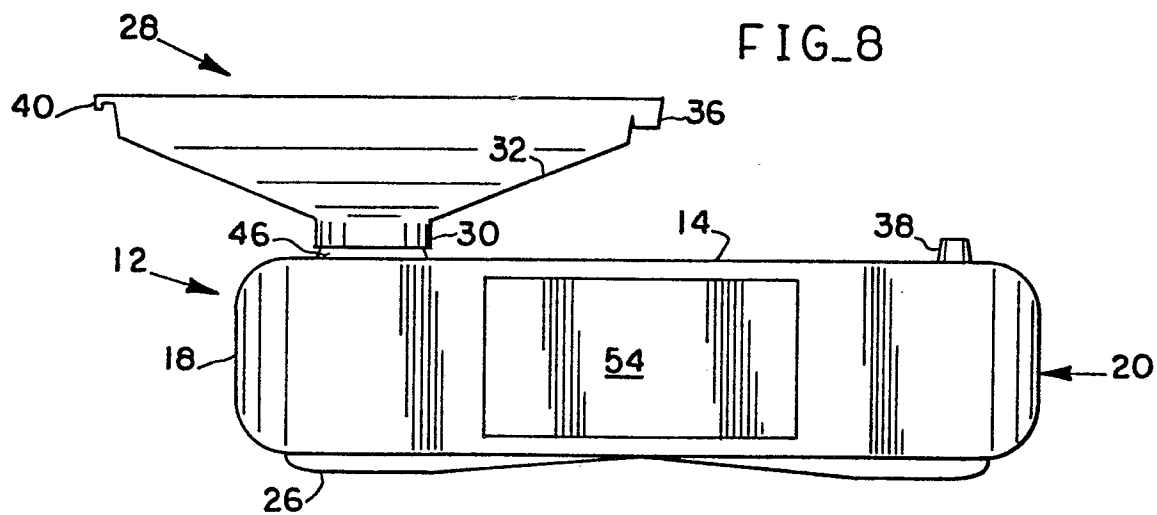
FIG_6



FIG_7



FIG_8



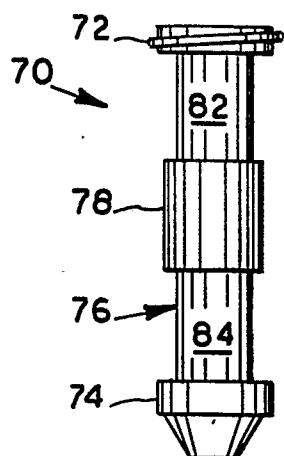


FIG. 9

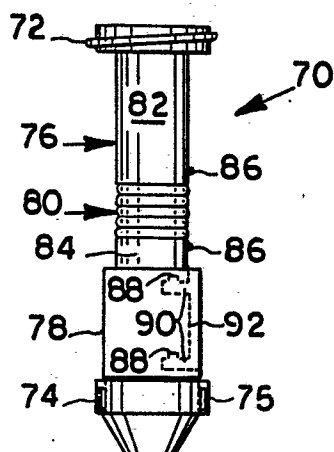


FIG. 10

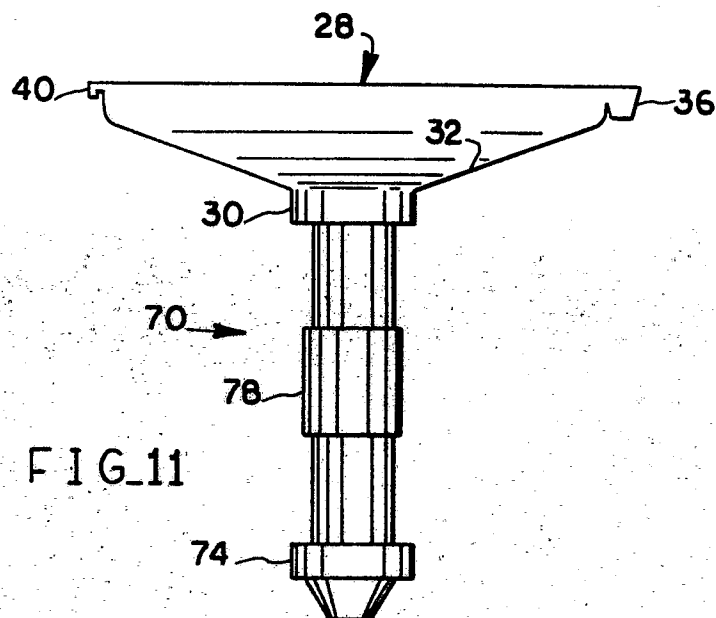


FIG. 11

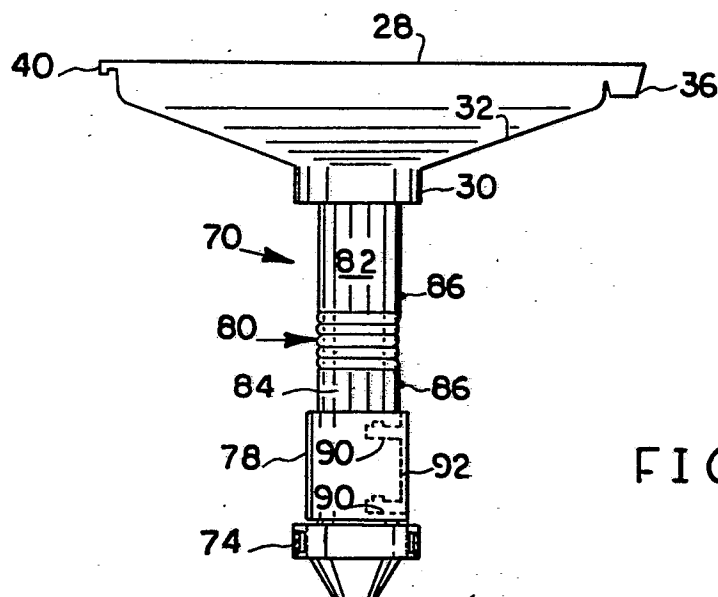


FIG. 12